

Impact of Technology on the Behavior of Students Towards Learning in Pakistan

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Abstract

The concept of life-long learning has become more concrete due to technology. Notably, the internet has become global, which is used by everyone to connect and share knowledge. A wide range of knowledge is available just a tap away. Technology is being used to build schools in remote areas and restore disaster-stricken schools. The teacher absenteeism rate has been high in Pakistan, which has contributed to low education quality. To address students' issues, GPE (Global Partnership for Education) has helped 53,000 students enroll since 2014. Using Technology, GPE has also tracked all the educational data in 29 districts of Sindh (GPE, 2020). The private education sector is rather more thriving and has made use of technology to provide quality education. The framework establishes that technology and the culture of an educational institute impact the education sector's learning. There is a dependency between an individual's learning process and social processes. The research also found that emotional self-awareness, conflict management, achievement, self-confidence, and developing others are characteristics of educators' emotional intelligence that impact their performance. Moreover, the challenging tasks develop students' learning, and cognitive development as less complex tasks only perpetuate the students' existing skills.

Keywords: Learning, technology, internet, knowledge, education

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1. Introduction

Technology has revolutionized and impacted every walk of life, including the education sector. With the inception of technology, the education sector, i.e., learning and teaching, has been reshaped. Technology has created a new networking world where schooling, education, learning, and teaching have been rethought (Raja

&Nagasubraman, 2018). The concept of life-long learning has become more concrete due to technology. Significantly, the internet has become global, which is used by everyone to connect and share knowledge. A wide range of knowledge is available just a tap away. In addition to that, technology has made learning more interactive but, at the same time, more personalized (Garg& Sharma, 2020).

Learning has become free as tutors and instructors provide education and schooling to people using remote learning and video conferencing. Thus, accessing information is more comfortable. Similarly, the retention and retrieval of knowledge and information, data storage methods, and better ways of presentation have created more interest in education and Learning (Raja & Nagasubraman, 2018). Computers are used as a means to create an interactive learning atmosphere. The use of multi-media projectors, visuals, and audio mediums enhances students' different learning styles. Microsoft's software, such as PowerPoint presentations, Word, Excel, and other animations, is used to encourage students' creativity (GPE, 2020). In Pakistan, although education has been hampered given the natural disasters significantly, in Sindh and Balochistan, the use of biometric fingerprints and WhatsApp groups have aided education provision. Technology is being used to build schools in remote areas and restore disaster-stricken schools (Garg & Sharma, 2020).

The teacher absenteeism rate has been high in Pakistan, which has contributed to low education quality. To address students' issues, GPE (Global Partnership for Education) has helped 53,000 students enroll since 2014. Using Technology, GPE has also tracked all the educational data in 29 districts of Sindh (GPE, 2020). Despite urbanization in Sindh, the floods during 2010 and 2011 destroyed education provision in remote and impoverished regions. Furthermore, 14 percent of public schools were destroyed due to heavy rain. The education provision for children from low income and girls are deprived of education. Keeping in mind these problems, school monitoring technology is being used in disaster-stricken areas. The tech solutions support school management to make sure that there is accountability (GPE, 2020). The use of mobile applications to track the attendance of teachers has raised accountability. Additionally, many teachers work offline and upload information when they gain access. The Sindh School Monitoring System has brought robust accountability to Pakistan's public education sector (GPE, 2020).

The private education sector is rather more thriving and has made use of technology to provide quality education. Universities and private colleges use sophisticated software, learning management systems, information and communication technology (ICT). The adoption of zoom conferences during Covid-19 to provide home-based education has quicker in the private sector (GPE, 2020). Over 300,000 schools were closed since March, but the use of applications and digital platforms helped in continuing education. However, Pakistan experiences a power breakdown which causes the internet to shut down. As a result, the provision of education is severed (Garg & Sharma, 2020). The internet services are low, and getting home broadband is also expensive. According to Pakistan Telecommunication Authority, only a million children have access to bandwidth and digital devices, and the penetration of smartphones is only 51 percent in 2020 (GPE, 2020). Nonetheless, over 40 million children have television access, leading the government to a new distant learning method through television called Teleschool. However, digital solutions are not the answer to education problems in Pakistan because the poor infrastructure, lack of continuous power, and no regular access to the internet hamper technology in education (GPE, 2020).

1.1 Scope of research

The rationale behind the present thesis is to identify the impact of technology on Pakistan's education sector because technological advancements are not novel, and breakthrough technologies have contributed to education worldwide. However, understanding the Pakistani educational sector's impact will help determine the factors hampering the progress, problems, and best practices in providing quality education. The scope of the research revolves around the Student of Pakistan. The research aims to understand the impact of technology on students in Pakistan.

1.2 Research question

- How has technology shaped the education acquisition behavior for the students towards learning in Pakistan?

1.3 Research Objectives

The thesis aims to analyze the impact of technology on the behavior of students towards learning in Pakistan. Following are the objectives of the thesis:

- To identify drivers of technology in the provision of education in Pakistan
- To analyze the impact of technology on the behavior of students in Pakistan

2. Literature Review

The internet drivers such as mobile-based multi-media and handheld smart devices have created learning opportunities without requiring physical or classroom presence. According to Hanif, Jamal & Imran (2018), the new technologies have paved the way for learning. The technologies are used to facilitate education. Technology is being used to prepare lectures through information and communication technology. These ICT tools have positively impacted self-regulated strategies and collaborative working. The smart handheld devices are enabling students to remain in touch with teachers providing course material and support them in exploring learning resources apart from the study material. Web 2.0 allows students to carry out real-time peer discussions, synchronize thoughts and learn from each other. It has also motivated students to utilize internet resources to enrich their educational experience. The study found that e-learning management systems are increasingly used in Pakistani universities. The research proposed considering factors in adopting the technology by extending the technology acceptance model (TAM). These factors drive the use of Technology in Pakistani institutes. Enjoyment, system accessibility, subjective norms, and perception of control drive technological adoption.

A wide range of literature is based on the technology acceptance model to understand the adoption of technology in the Pakistani education sector. Kanwal&Rehman (2014) researched the e-learning adoption model in the context of Pakistan. By integrating information and

communication technology tools in the conventional education infrastructure, the education sector has been restructured in knowledge transfer and sharing. The study pressed on the positive impact of integrating ICT with traditional education in developed countries. The developed countries have paid attention to e-learning systems in their educational institutions.

On the other hand, developing countries like Pakistan lag in exploiting the benefits of technology. However, with time, the acceptance of e-learning in developing countries has increased. Thus, the use of technology is at an immature stage. The study proposed factors such as social context, individual, system, and organizational context in e-learning. Using the TAM model, e-learning is being used in the universities of Pakistan. The organizational drivers, such as easy access and system accessibility, are essential in adopting technology in education.

Furthermore, Imtiaz, Khan &Shakir(2015) provided that broadband and cellular subscribers are growing in Pakistan since the last decade. The developments in the telecommunication sector have increased in Pakistan. The sector focuses on increasing benefits for users to increase their accessibility for quality services and add modern services. International investment has further resulted in improving the market. The investment in broadband development will directly contribute to different sectors of Pakistan.The integration of social networks and social media in Pakistan's education sector and its impact has been studied by Tariq, Mehboob, Khan &Ullah(2012). The study pressed on the effectiveness of social websites is positive on the students. However, at the same time, it is also distracting students from education. Although social networks such as Twitter, Facebook, and LinkedIn are useful platforms to learn and connect. The students have moved from using these platforms for learning purposes to social networking for recreation. To address these issues, Farid et al.(2015)identified the integration of information and communication technology tools in education to shift the learning paradigm. However, it is challenging for higher education institutes to shift to the paradigm of facilitating

learning. E-learning has not gained popularity in developing countries like Pakistan as anticipated in the decade. The study contributed to identifying the impact of the barriers in promoting e-learning in Pakistan. The issues such as lack of design process, software quality, instructional designers, insufficient bandwidth, lack of accessibility to internet broadband, power breakdown, cost of a smartphone, poor ICT infrastructure, and lack of faculty interest are some of the barriers that must be addressed to increase the use of e-learning.

Moreover, Arif&Kanwal(2016) investigated acceptance of social media technologies in the education sector and its effect on distance students' academic performance in Allama Iqbal Open University. Using the theory of planned behavior and combined-technology acceptance model and descriptive survey to collect responses from 365 students, the study aimed to understand the impact of these technologies on students' academic performance. The randomly selected students used and were familiar with social media such as WhatsApp, Facebook, and YouTube. However, Twitter is not used frequently. The study also found that students lacked technology information. Many students also lacked knowledge of Skype. The results indicated that the gender difference explained the different opinions about the use of social media. The regression analysis showed that perceived behavior control, perceived usefulness, and attitude towards social media use enhanced social media's actual use among students. This increased the academic performance of the technology.

Pasha(2012) studied the readiness of primary schools in terms of inclusive education with technology. The study used a cross-sectional and survey-based descriptive study undertaken in 75 private and public primary schools from 300 teachers. The research aimed to explore the readiness of education for inclusion practices and inclusive education in primary schools. The principal streams schools are not ready for inclusive education due to several challenges: lack of commitment, professional development of teachers, lack of policy and collaborative practices, unfriendly infrastructure, and a dearth of skills among educators. However, specific drivers encourage educators' readiness,

such as their positive attitude in meeting the learning needs of different students, encouraging diversity, trust, increased awareness towards the special needs of disabled stakeholders, and teachers' positive attitude towards integrating technology. By integrating technology, family, and other stakeholders, a positive education system could be created nationally. The study proposed that teachers can contribute to the implementation of an inclusive system.

Similarly, Saleem, Moosa, Imam & Khan(2017) studied the quality of service as an essential factor in maintaining higher education institutes' competitiveness in Pakistan. Ensuring students' satisfaction should be a top priority—the university's culture moderates the relationship between the university's price and reputation. Keeping in mind these aspects, higher education institutions should achieve a significantly higher satisfaction of students by integrating technology into their education system. The culture plays an essential role in strengthening the quality of service and sustaining students.

According to Kanwal&Rehman (2017), e-learning has shaped the conventional traditional system into an efficient and flexible system. Using the Pakistan E-learning Adoption Conceptual Model, the study collected responses from 354 students using virtual universities in Pakistan. The study's findings revealed that factors such as internet experience, system characteristics, enjoyment, and computer self-efficacy significantly impact the ease of use as perceived by students. The system characteristics strongly determine the usefulness of e-learning in education. However, the subjective norm is not perceived as useful or significant.

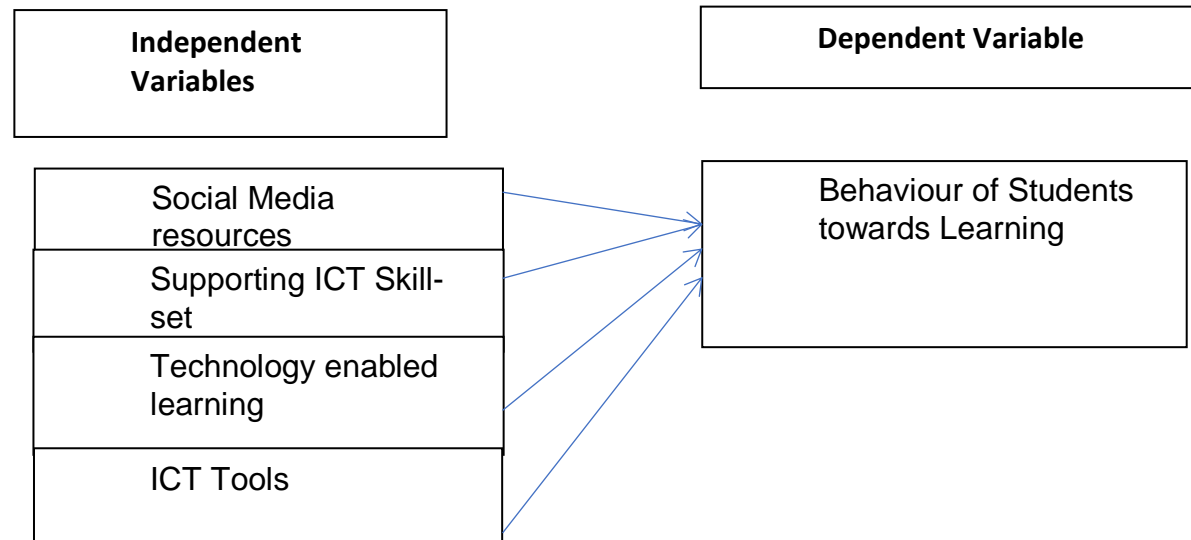
It is important to note here that teachers' motivation in adopting technology also impacts the adoption of technology in education. In this regard, Amin, Saeed, Lodhi& Iqbal (2013)studied the impact of training on employees' performance and motivation in Pakistan's education sector using technology. The training and development of teachers lead to a higher commitment to using inclusive teaching and integrating technology. To meet the needs of the education sector in Pakistan, it is

necessary to use skilled employees and new technology to provide quality education to learners. Training and development increase teacher efficiency and enhances student experience with the use of technology. This has also been confirmed in the study of Asrar-ul-Haq, Anwar & Hassan (2017). The research found that emotional self-awareness, conflict management, achievement, self-confidence, and developing others are characteristics of educators' emotional intelligence that impact their performance. These factors are enhanced using training and development. As a result, the teachers perform better in their job and become open to new teaching methods due to their trait of developing others.

Apart from e-learning and social networks, digital media is also increasingly being used in Pakistan's education sector. Rafiq&Ameen(2012)investigated the demand for digitalization of content and digital media use in Pakistan's higher education sector. Using a critical review approach and semi-structured interviews from twenty-five library experts, the research findings revealed that digital media is highly used in Pakistan's higher education sector because of

the increasing demand for digitized content. Thus, the research recommended that Pakistan's libraries contribute by acquiring digital resources and information to digitize Pakistan's digitized initiatives. Manzoor, Sarwar, and Asim (2020)studied mobile learning's impact on male and female faculty members in schools. The research found no difference in the performance of female and male faculty with the inclusion of m-learning. M-learning allows faculty members to use Google classroom in their classes and enable students to access information in real-time. Thus, the research suggested including m-learning to benefit students. Finally, Shehzadi et al. (2020) studied the role of ICT tools, e-information, and e-service quality towards universities' image in Pakistan and on concentrating e-learning, satisfaction, and e-word of the mouth of students. The findings revealed e-information, ICT, and e-service quality contribute positively to the e-learning of students. As a result, it positively creates satisfaction and the e-word of the mouth of the university. Consequently, it generates a brand image of the educational institutes through word of mouth and students' satisfaction.

**Conceptual Framework: Independent and dependent variables:
Learner's use of Technology**



H1: Social Media resources and platforms to enhance the ICT skillset will have no influence. Having access to and using information and communication technologies improves individual skills and influences students' behavior towards learning in Pakistan.

H2: Supporting ICT Skill-set to improve learner's capacity with technology will not be affected by having access to and using information and communication technologies improve individual skills and influence students' behavior towards learning in Pakistan.

H3: Technology-enabled learning environment for e-learning will not be affected by having access to and using information and communication technologies to improve individual skills and influence students' behavior towards learning in Pakistan.

H4: Using ICT tools such as word processors, Excel, PowerPoint, etc., will also not be dependent on having access to and use of information and communication technologies to improve individual skills and influence the behavior of students towards learning in Pakistan.

DV: Students' behavior towards learning will be the dependent variable as it will be influenced through Social Media resources, Supporting ICT Skill-set; Technology-enabled Learning, and ICT Tools.

3. Materials and Methods

3.1 Research philosophy

The research philosophy refers to the belief in which data is gathered and analyzed. The present study is based on positivism. Positivism philosophy is based on objectivity in understanding the social world (Goddard & Melville, 2011). This research philosophy depends on the facts that are either observed or gained through measurement. Thus, positivism is useful because it provides factual knowledge which is trustworthy. However, positivism limits the role of the researcher in data collection. Nonetheless, it maintains objectivity in research which eliminates any subjective opinion or belief of the researcher.

3.2 Research approach

There are two types of research approaches such as inductive and deductive approach. The inductive approach aims to develop theory using specific to general observations. On the other hand, the deductive approach is used to test the existing theory using generalizations to specific observations (Goddard & Melville, 2011). The present study has used a deductive approach to research as the research aims to test the impact of technology on the education sector. The aim of the study is not theory development. The deductive approach is useful in explaining the causal association between variables and concepts. It also helps in measuring the research concept quantitatively. Since the purpose of the research is to analyze the impact of technology on Pakistan's education sector, deductive research would be a suitable approach in quantifying the impact of technology on the education sector.

3.3 Research type and sampling

The present research has adopted a quantitative research approach in that the research uses mathematical tools to explain the relationship between technology and education for students in Pakistan. Quantitative research is suitable for the present study because it will help gathering data to interpret the results and impact of technology. The sampling method includes simple random sampling because it gives an equal chance of selection to the population members. The sample includes 200 students in Pakistan.

3.4 Data collection and analysis

The present research uses primary data, which is first-hand data. Primary data is useful because it allows the researcher to control the quality and obtain recent data relating to the research question and objectives. Thus, primary data has been collected from Pakistan students using a survey questionnaire adopted to avoid validity and reliability issues. The survey is a useful method for data collection as it allows the researcher to research on a larger scale in a shorter time. The questionnaire for the research is based on a 5 point Likert scale. The data has been analyzed using mathematical expressions and formulae.

3.6 Ethical considerations

The research has informed the participants regarding the purpose of the research and assured them of their confidentiality. Moreover, respondents have been asked to give full consent before participating in

the research. Finally, respondents can withdraw from the research not to feel coerced into participating in the research.

4. Results and Findings

Descriptive Statistics

| | Mean | Std. Deviation | N |
|----|--------|----------------|-----|
| DV | 2.8400 | 1.30496 | 200 |
| H1 | 2.7150 | 1.34642 | 200 |
| H2 | 2.4750 | 1.21522 | 200 |
| H3 | 2.6850 | 1.31316 | 200 |
| H4 | 2.4250 | 1.21315 | 200 |

4.

1 Correlation Analysis

Standard deviation demonstrates how much dispersion or variation prevails from the expected value of the average mean. Specifically, it evaluates the average distance among the data values in the mean and set. The standard deviation is the synopsis evaluation of the disparities of every observation from the mean. The question was asked if having access to and using information and communication technologies improves individual skills, for which the standard deviation is 1.30496 and the mean is 2.8400. This demonstrates that the independent responses were 1.5 points away from the mean on average to this question. The question was asked whether Social Media resources and platform to enhance the ICT skillset for which the standard deviation is 1.34642 and mean is 2.7150; this demonstrates that the independent responses, on average to this question, were 1.4 points away from the mean. The third question was that if Supporting ICT Skill-set improves the learner's capacity with technology, the standard deviation is

1.21522, and the mean is 2.4750. This demonstrates that the independent responses were 1.2 points away from the mean on average to this question.

Furthermore, it was also asked if a technology-enabled learning environment for e-learning (thesis, etc.) supports collaborative development. The standard deviation is 1.31316, and the mean is 2.6850; this demonstrates that the independent responses, on average to this question, were 1.3 points away from the mean. The last question from the respondents was that whether Using ICT tools such as word processor, Excel, PowerPoint, etc. is linked with learning and development or which the standard deviation is 1.21315 and the mean is 2.4250; this demonstrates that the independent responses, on average to this question, were 1.2 points away from the mean. A small standard deviation signifies that the mean and the standard deviation are closely clustered around each other.

| Correlations | | DV | H1 | H2 | H3 | H4 |
|---------------------|----|-------|------|------|------|------|
| Pearson Correlation | DV | 1.000 | .080 | .257 | .088 | .097 |

| | | | | | | |
|-----------------|----|------|-------|-------|-------|-------|
| | H1 | .080 | 1.000 | .820 | .884 | .914 |
| | H2 | .257 | .820 | 1.000 | .740 | .830 |
| | H3 | .088 | .884 | .740 | 1.000 | .816 |
| | H4 | .097 | .914 | .830 | .816 | 1.000 |
| Sig. (1-tailed) | DV | . | .131 | .000 | .108 | .086 |
| | H1 | .131 | . | .000 | .000 | .000 |
| | H2 | .000 | .000 | . | .000 | .000 |
| | H3 | .108 | .000 | .000 | . | .000 |
| | H4 | .086 | .000 | .000 | .000 | . |
| N | DV | 200 | 200 | 200 | 200 | 200 |
| | H1 | 200 | 200 | 200 | 200 | 200 |
| | H2 | 200 | 200 | 200 | 200 | 200 |
| | H3 | 200 | 200 | 200 | 200 | 200 |
| | H4 | 200 | 200 | 200 | 200 | 200 |

4.2 Regression

Variables Entered/Removed

| Mode | Variables Entered | Variables Removed | Method |
|------|---|-------------------|--------|
| 1 | Using ICT tools such as word processor, Excel, PowerPoint, etc. is linked with learning and development, technology-enabled learning environment for e-learning (thesis, etc.) support collaborative development, Supporting ICT Skill-set to improve learner's capacity with Technology, Social Media resources, and platform to enhance ICT skillset ^b | . | Enter |

- a. Dependent Variable: Having access to and use of information and communication technologies improve individual skills
- b. All requested variables entered.

Model Summary^b

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|--------|----------|-----|------|
| | | | | | R Change | Square | F Change | df1 | df2 |
| 1 | .351 ^a | .123 | .105 | 1.23457 | .123 | 6.835 | 4 | 195 | .000 |

a. Predictors: (Constant), Using ICT tools such as word processor, Excel, PowerPoint, etc. is linked with learning and development, technology-enabled learning environment for e-learning (thesis, etc.) support collaborative development, Supporting ICT Skill-set to improve learner's capacity with Technology, Social Media resources and platform to enhance ICT skillset

b. Dependent Variable: Having access to and use of information and communication technologies improve individual skills

The above table advances the values of R² and R. The value of R presents a simple correlation and is .351^a, which denotes a higher level of correlation. The value of R² denotes how much of the accumulated variation is linked with training and developing, access to and use of information and communication technologies improve individual skills could be expressed by the independent variable. With regards to this value, 12.3% could be expressed, which is not very large. The next table below is ANOVA, which represent how well the equation of regression fits the information or data (i.e., estimates the dependent variable) and is demonstrated below;

ANOVA^a

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|-------|------------|----------------|-----|-------------|-------|-------------------|
| 1 | Regression | 41.669 | 4 | 10.417 | 6.835 | .000 ^b |
| | Residual | 297.211 | 195 | 1.524 | | |
| | Total | 338.880 | 199 | | | |

- a. Dependent Variable: Having access to and use of information and communication technologies improve individual skills
- b. Predictors: (Constant), Using ICT tools such as word processor, Excel, PowerPoint, etc. is linked with learning and development, technology-enabled learning environment for e-learning (thesis, etc.) support collaborative development, Supporting ICT Skill-set to improve learner's capacity with Technology, Social Media resources and platform to enhance ICT skillset

This table denotes that the model of regression forecasts the dependent variable substantially well. It is determined by looking at the "Sig" column and "Regression" row. This signifies the statistical importance of the regression model, which was performed. Here $p < 0.0005$, which is lesser than 0.05, denotes that, overall, the regression model statistically substantially estimates the outcome variable. The

coefficients' table advances with the required data to anticipate dependent variables from independent variables and identify whether the dependent variable statistically links to the model. Moreover, the values can be used in column B under the "Unstandardised Coefficients" column, as demonstrated below:

Coefficients^a

| Model | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | 95.0% Confidence Interval for B | | Correlations | | | Collinearity Statistics | |
|--------------|-----------------------------|------------|---------------------------|--------|------|---------------------------------|-------------|--------------|---------|-------|-------------------------|-------|
| | B | Std. Error | Beta | | | Lower Bound | Upper Bound | Zero-order | Partial | Part | Tolerance | VIF |
| 1 (Constant) | 2.336 | .211 | | 11.079 | .000 | 1.920 | 2.752 | | | | | |
| H1 | -.313 | .203 | -.323 | -1.547 | .124 | -.713 | .086 | .080 | -.110 | -.104 | .103 | 9.717 |
| H2 | .670 | .134 | .624 | 4.987 | .000 | .405 | .935 | .257 | .336 | .334 | .287 | 3.482 |
| H3 | .043 | .143 | .043 | .299 | .766 | -.239 | .324 | .088 | .021 | .020 | .218 | 4.594 |
| H4 | -.173 | .190 | -.160 | -.908 | .365 | -.547 | .202 | .097 | -.065 | -.061 | .144 | 6.943 |

a. Dependent Variable: Having access to and use of information and communication technologies improve individual skills

To represent the regression equation as:

$$\text{Dependent variable} = 2.336 + -.313 + .670 + .043 + -.173 = 2.563$$

These anticipate tells regarding the relationship among dependent variables and independent variables. Unstandardized coefficients denote how much dependent variable ranges with an independent

variable when every other independent variable is kept constant. The unstandardized coefficient B1, for Social Media resources and platforms to enhance ICT skillset, is -0.313, which means an increased independent variable would decrease a -0.313 independent variable.

Coefficient Correlations^a

| Model | | Using ICT tools such as word processor, Excel, PowerPoint, etc. is linked with learning and development | The technology-enabled learning environment for e-learning (thesis, etc.) support the collaborative development | Supporting ICT Skill-set to improve learner's capacity with technology | Social Media resources and platform to enhance ICT skillset | |
|-------|--------------|---|---|--|---|-------|
| 1 | Correlations | Using ICT tools such as word processor, Excel, PowerPoint, etc. is linked with learning and development | 1.000 | -.024 | -.346 | -.588 |
| | | Technology enabled learning environment for e-learning (thesis, etc) support collaborative developemnt | -.024 | 1.000 | -.043 | -.568 |
| | | Supporting ICT Skill-set to improve learner's capacity with technology | -.346 | -.043 | 1.000 | -.198 |
| | | Social Media resources and platform to enhance ICT skillset | -.588 | -.568 | -.198 | 1.000 |
| | Covariances | Using ICT tools such as word processor, Excel, PowerPoint, etc. is linked with learning and development | .036 | -.001 | -.009 | -.023 |

| | | | | |
|--|-------|-------|-------|-------|
| Technology enabled learning environment for e-learning (thesis, etc) support collaborative developemnt | -.001 | .020 | -.001 | -.016 |
| Supporting ICT Skill-set to improve learner’s capacity with technology | -.009 | -.001 | .018 | -.005 |
| Social Media resources and platform to enhance ICT skillset | -.023 | -.016 | -.005 | .041 |

a. Dependent Variable: Having access to and use of information and communication technologies improve individual skills

A correlation coefficient evaluates the level of relationship. Correlation and covariance are highly useful in determining the connection between two continuous variables. Covariance demonstrates whether both

variables diversify in a similar direction (positive covariance) or the opposite direction (negative covariance). From the above table, it could be determined that both the variable vary in the opposite direction.

Collinearity Diagnostics^a

| Model | Dimension | Eigenvalue | Condition Index | Variance Proportions | | | | | |
|-------|-----------|------------|-----------------|----------------------|---|--|---|---|--|
| | | | | (Constant) | Social Media resources and platform to enhance ICT skillset | Supporting ICT Skill-set to improve learner's capacity with technology | The technology-enabled learning environment for e-learning (thesis, etc.) support the collaborative development | Using ICT tools such as word processor, Excel, PowerPoint, etc. is linked with learning and development | |
| 1 | 1 | 4.759 | 1.000 | .01 | .00 | .00 | .00 | .00 | |
| | 2 | .145 | 5.735 | .96 | .01 | .01 | .01 | .01 | |

| | | | | | | | |
|---|------|--------|-----|-----|-----|-----|-----|
| 3 | .052 | 9.560 | .00 | .01 | .60 | .32 | .00 |
| 4 | .030 | 12.526 | .03 | .03 | .39 | .37 | .44 |
| 5 | .014 | 18.598 | .01 | .94 | .00 | .30 | .54 |

a. Dependent Variable: Having access to and use of information and communication technologies improve individual skills

When a regressor is closely a linear combination of different regressors, the impacted estimations are unstable and obtain higher standard errors. The problem is known as collinearity. In the above table, for dimension

3: Eigenvalue dim 1/ Eigenvalue dim 3: $4.759/052 = 91.5$. This value shows a powerful indication of the problem with multicollinearity.

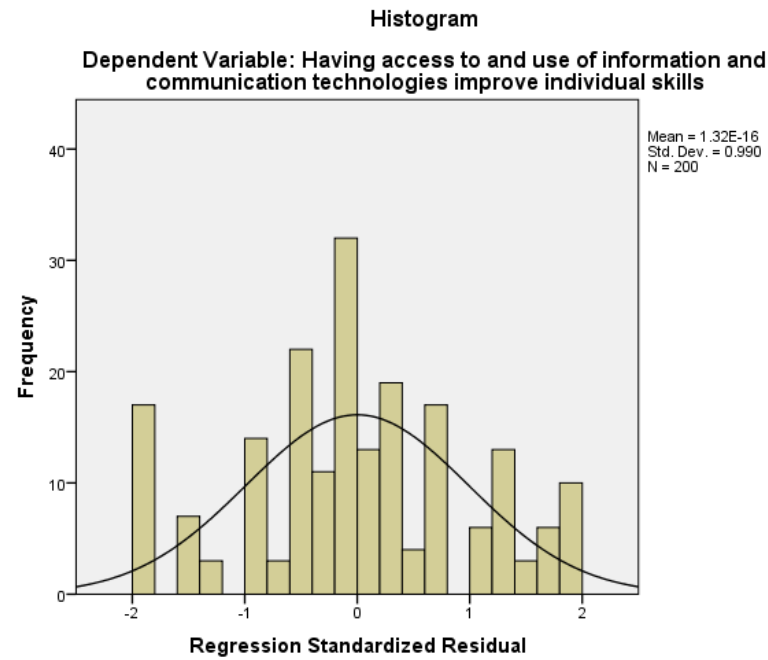
Residuals Statistics^a

| | Minimum | Maximum | Mean | Std. Deviation | N |
|-----------------------------------|----------|---------|--------|----------------|-----|
| Predicted Value | 2.1198 | 3.8153 | 2.8400 | .45759 | 200 |
| Std. Predicted Value | -1.574 | 2.131 | .000 | 1.000 | 200 |
| Standard Error of Predicted Value | .104 | .472 | .185 | .061 | 200 |
| Adjusted Predicted Value | 2.1222 | 3.8886 | 2.8376 | .46090 | 200 |
| Residual | -2.45999 | 2.43686 | .00000 | 1.22210 | 200 |
| Std. Residual | -1.993 | 1.974 | .000 | .990 | 200 |
| Stud. Residual | -2.011 | 1.988 | .001 | 1.000 | 200 |
| Deleted Residual | -2.50603 | 2.47184 | .00240 | 1.24788 | 200 |
| Stud. Deleted Residual | -2.027 | 2.003 | .001 | 1.004 | 200 |
| Mahal. Distance | .411 | 28.104 | 3.980 | 4.135 | 200 |
| Cook's Distance | .000 | .065 | .004 | .007 | 200 |
| Centered Leverage Value | .002 | .141 | .020 | .021 | 200 |

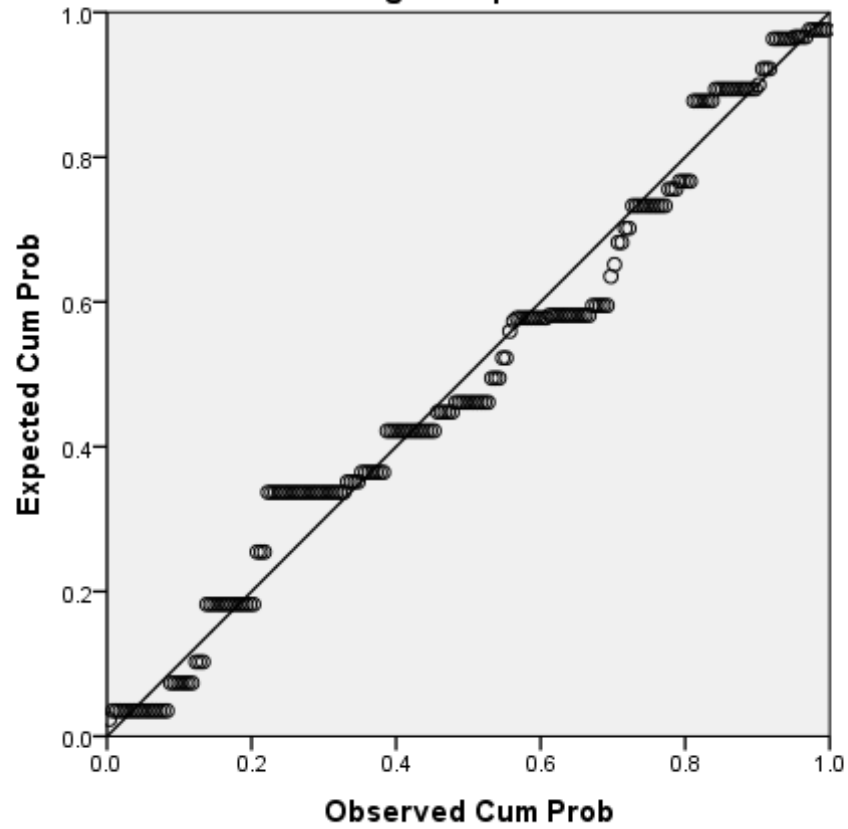
a. Dependent Variable: Having access to and use of information and communication technologies improve individual skills

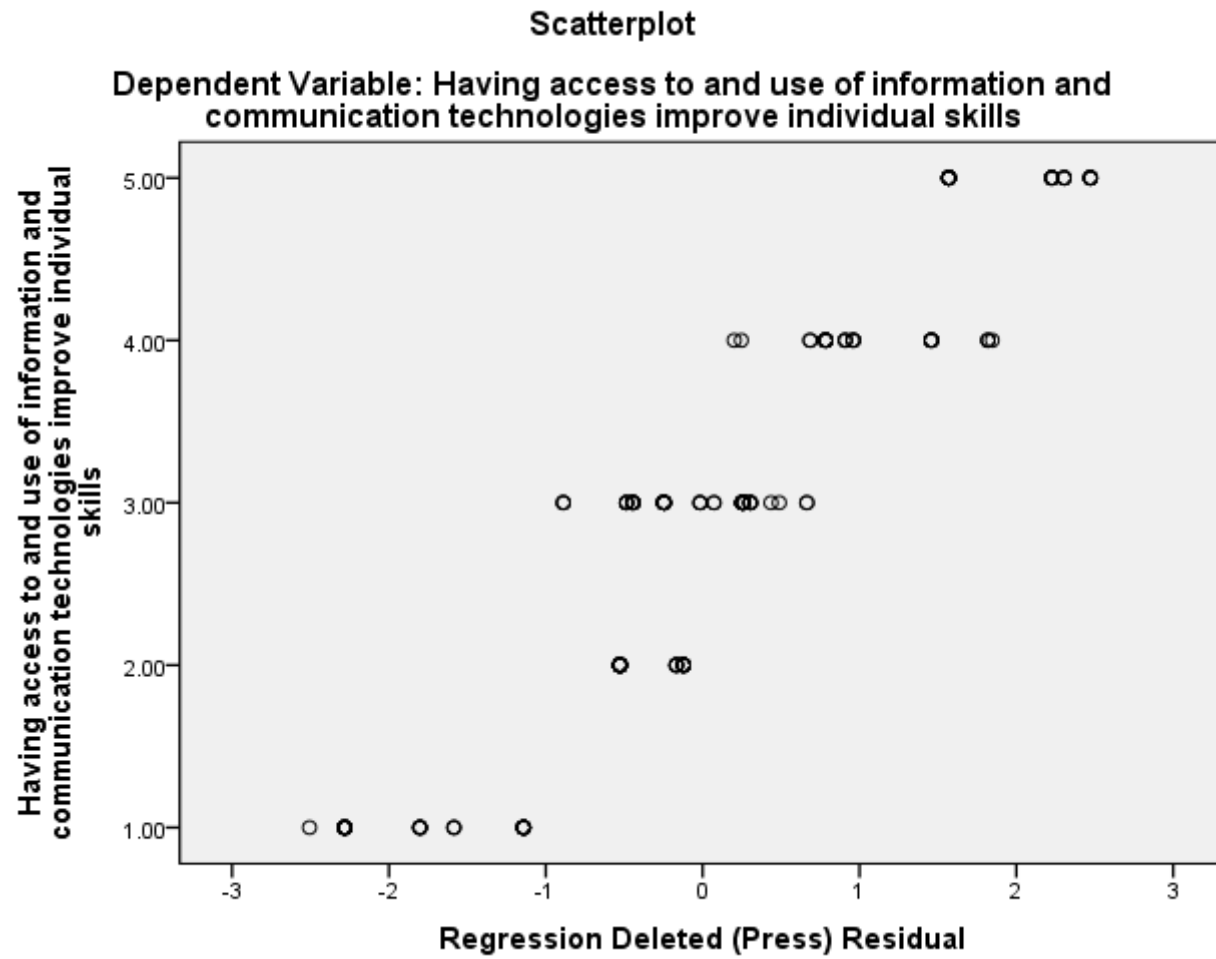
the model anticipates for that observation. The standard deviation for the predicted value is .45759, and the mean is 2.8400. This demonstrates that the independent responses were 2.4 point away from the mean on average to this question.

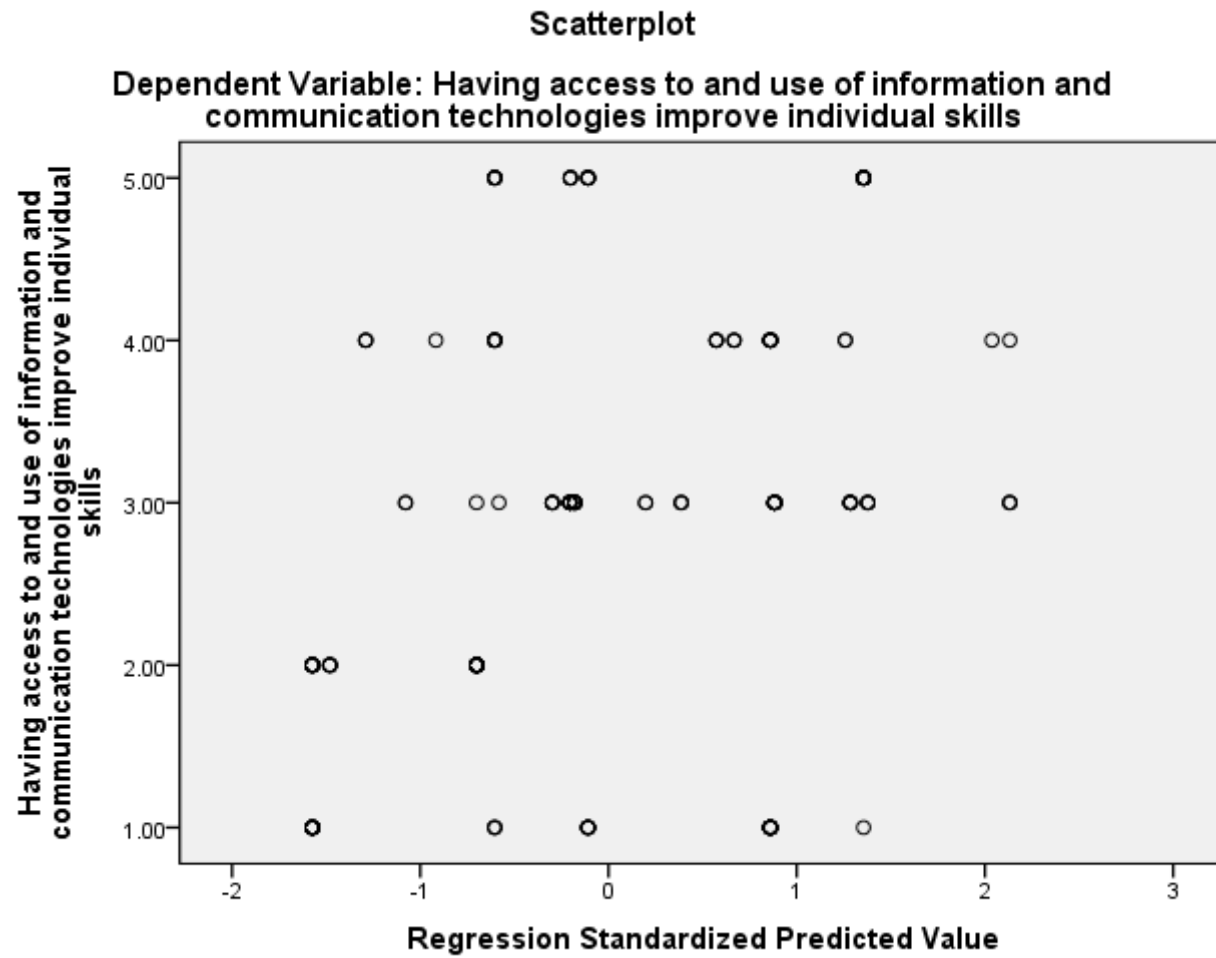
A residual is a distinction between the mean value and the observed that

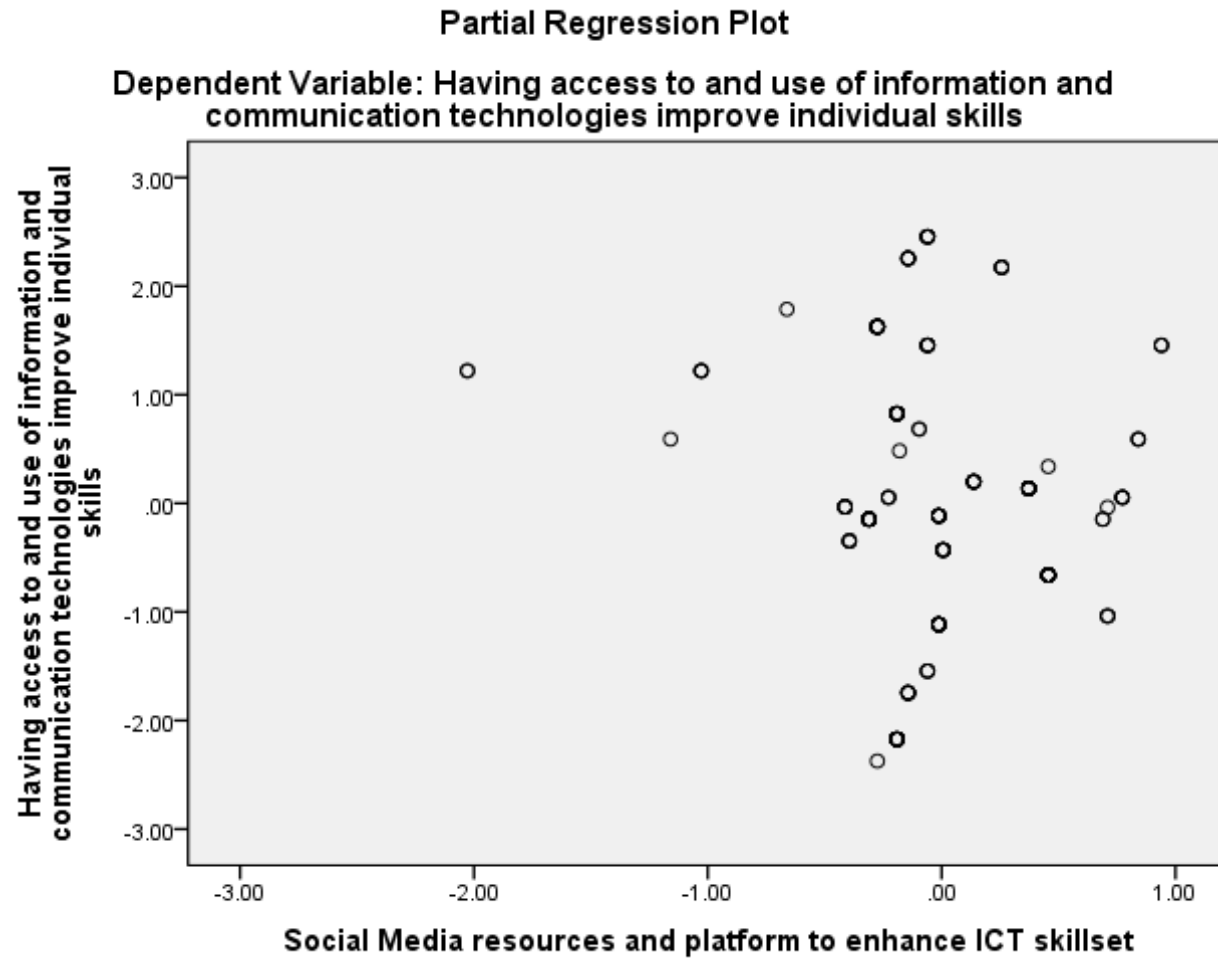


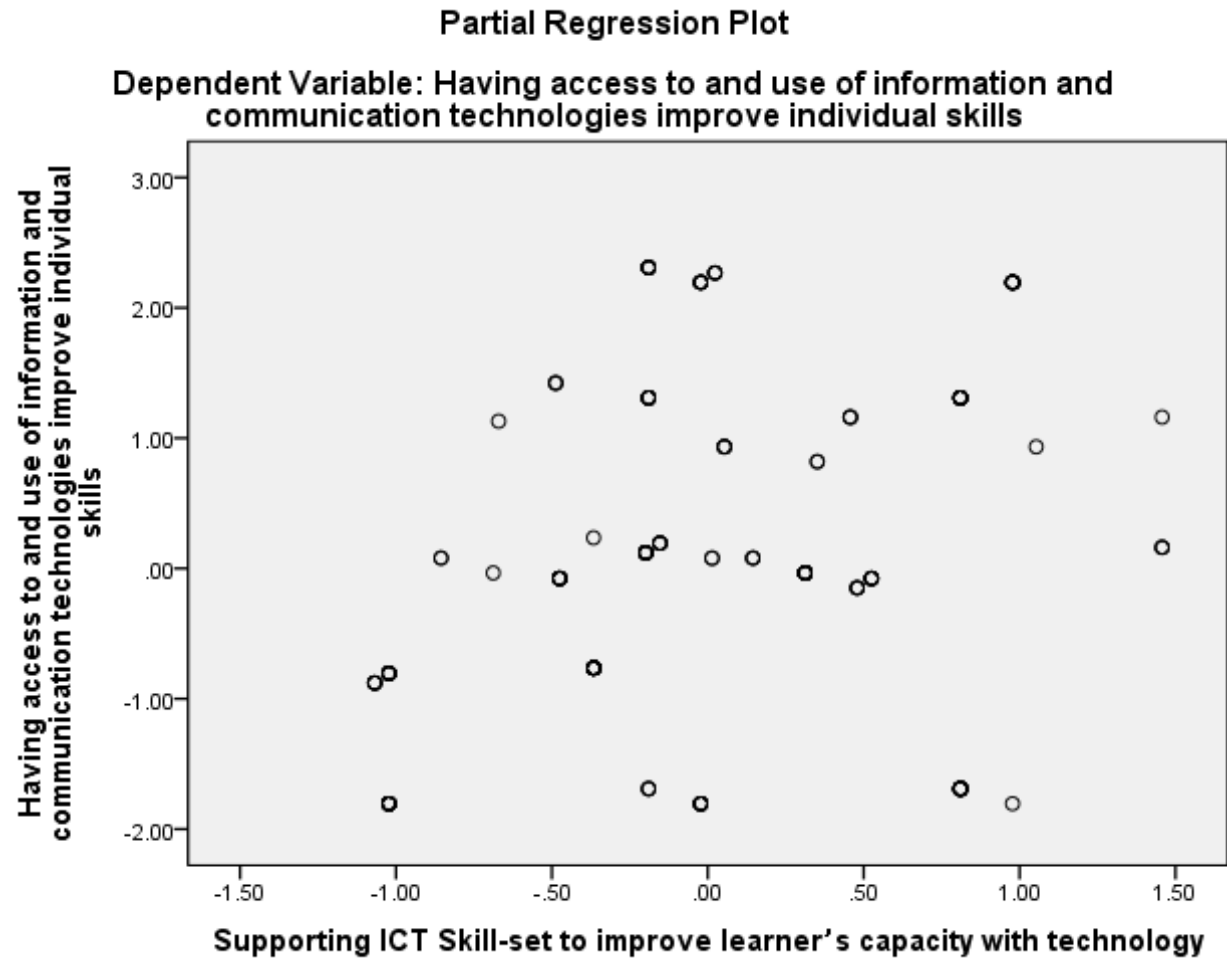
Normal P-P Plot of Regression Standardized Residual
Dependent Variable: Having access to and use of information and communication technologies improve individual skills

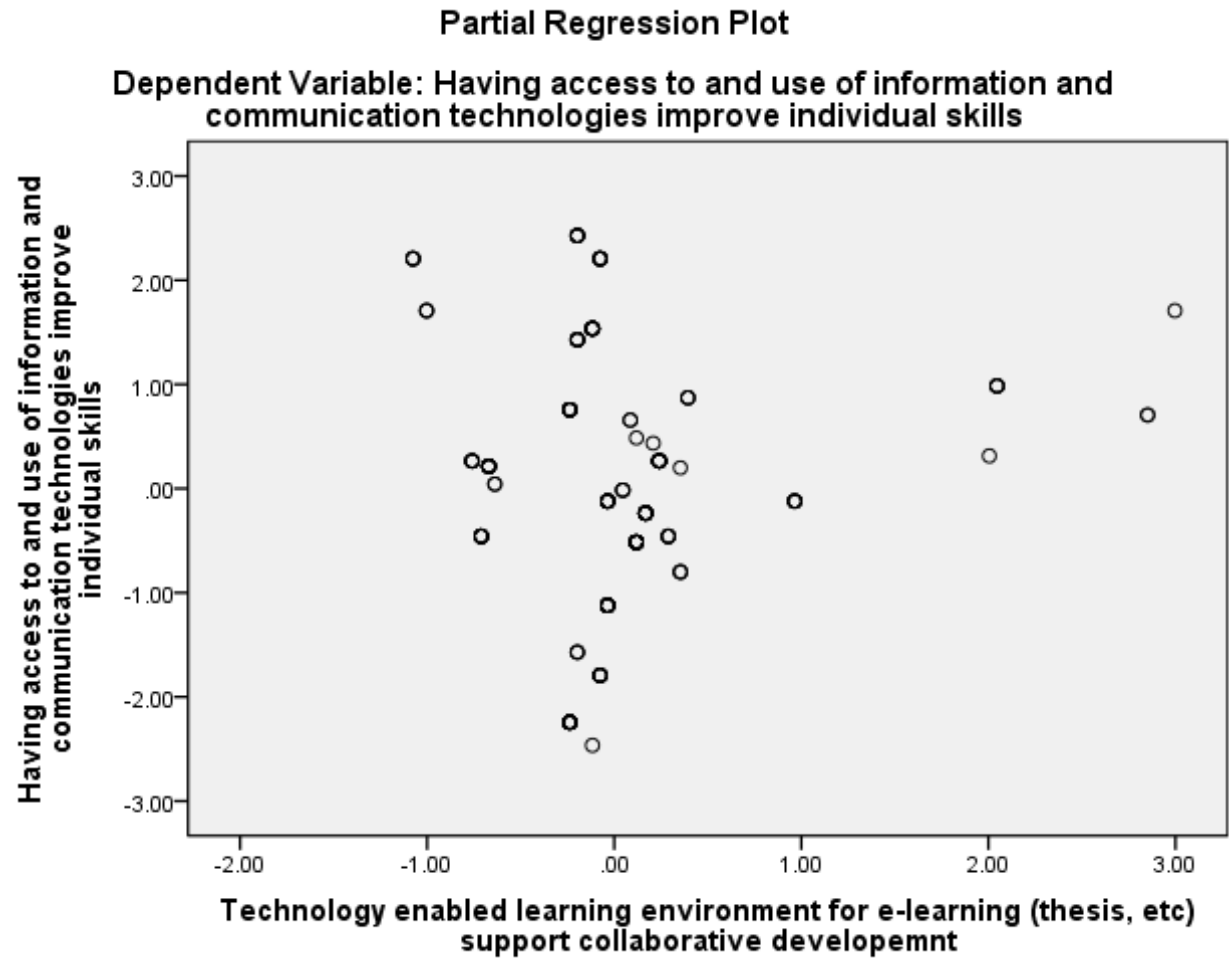


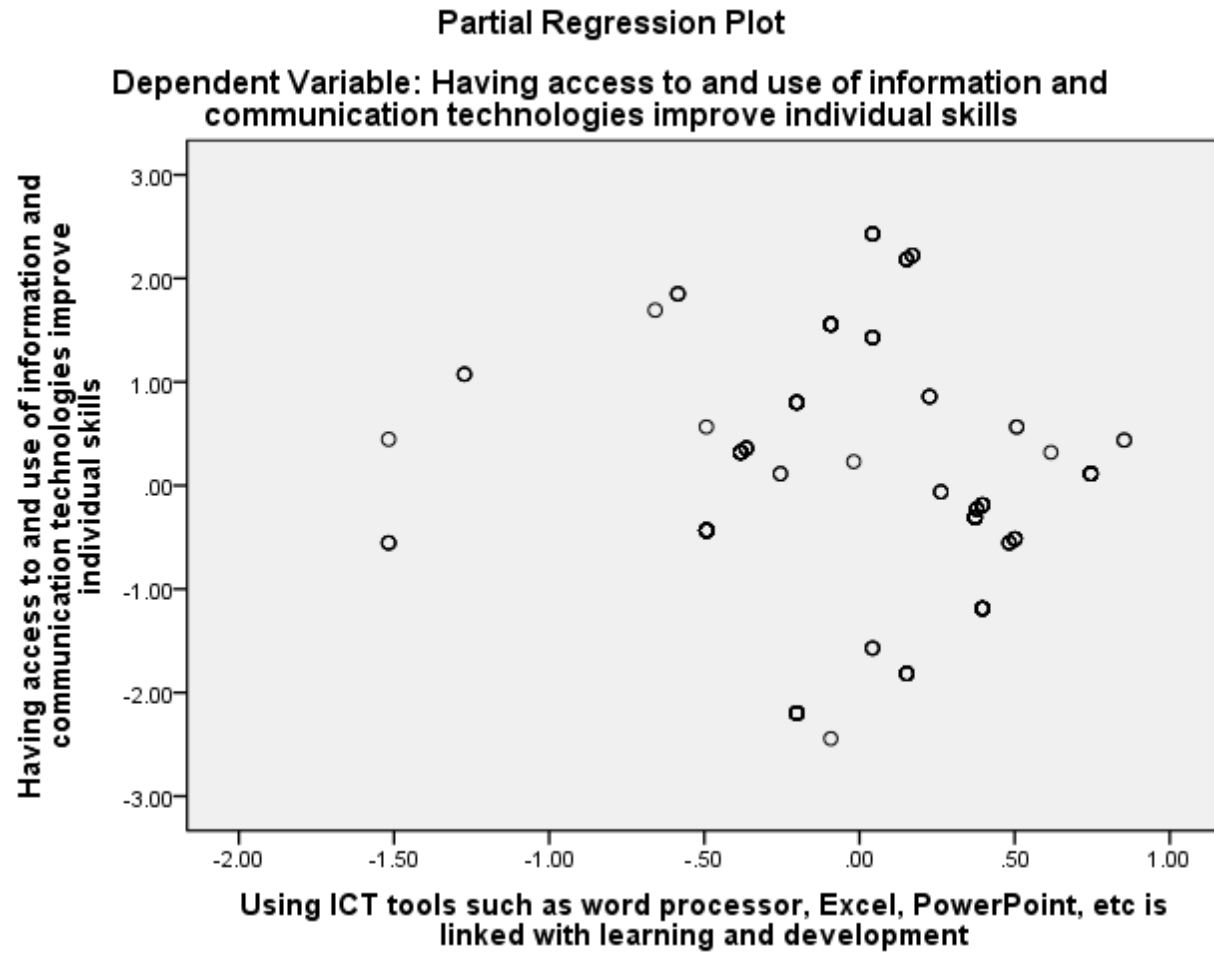












5. Conclusion

The research revolved around the topic impact of technology on the behavior of students towards learning in Pakistan. It has been determined that technologies are used to facilitate education. Technology is being used to prepare lectures through information and communication technology. These ICT tools have positively impacted self-regulated strategies and collaborative working. The smart handheld devices are enabling students to remain in touch with teachers providing course material and support them in exploring learning resources apart from the study material. Technologies perform a pivotal role for students towards learning in Pakistan. The theoretical framework emphasizes the role of technology and tech culture on students' learning and development in Pakistan's education sector. The framework established that technology and the culture of an educational institute impact the education sector's learning. The deductive approach has been used in this research paper. The regression analysis has been carried out in this paper. The regression analyses carried out have shown a positive impact of technology on students' behavior towards learning in Pakistan. The H1, H2, H3, and H4 are all coordinated with the framework, and therefore, the regression analysis is highly supported throughout the research study. The correlation results in positive results of 0.820, 1.00, 0.740, and 0.830, respectively, which establish strong relations of the corresponding elements and imply a better change. However, the covariance has depicted negative results of -0.023, -0.16, -0.05, respectively but has significantly improved for social media resources and platforms to enhance ICT skillset by a positive .041.

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